REMARKS

I. Status Summary

Claims 32-56 are pending in the subject U.S. patent application. Claims 1-31 were canceled in a preliminary amendment. Claims 42-56 have been canceled herein as being drawn to unelected subject matter. Claims 32-41 presently stand rejected.

Claims 32 and 35-41 have been rejected under 35 U.S.C. § 112, first paragraph. Claims 32-41 have been rejected under 35 U.S.C. § 112, second paragraph. Claims 32 and 35-41 have been rejected under 35 U.S.C. § 102(b). Claims 32 and 35-40 have been rejected under 35 U.S.C. § 102(a). Claims 32 and 33 have been rejected under the judicially created doctrine of obviousness-type double patenting.

Claims 42-56 have been canceled without prejudice. Applicants hereby reserve the right to file one or more continuation applications with claims directed to the subject matter of the canceled claism.

Claims 32 and 35-37 have been amended. New claim 57 has been added. Additionally, the specification has been amended to include the patent number of the U.S. patent that issued from the parent U.S. patent application from which the current application claims priority and to correct for typos. Further, a Substitute Sequence Listing has been submitted. No new matter has been added. Upon entry of Amendment A, claims 32-41 and 57 will be pending in the subject application.

Reconsideration of the application as amended and further in view of the remarks set forth herein below is respectfully requested.

II. Election/Restrictions

Applicants understand that by sustaining the Restriction Requirement, the Patent Office has searched claims 32-41 with respect to SEQ ID NO's 5 and 6, only. Applicants respectfully submit that the arguments presented hereinbelow are also applicable to SEQ ID NO's 7-30. Thus, applicants respectfully request that SEQ ID NO's 7-30 be rejoined upon allowance of the claims reciting SEQ ID NO's 5 and 6.

III. Priority

The Patent Office has asserted that in order to seek benefit of a prior-filed application under 35 U.S.C. § 120 and 37 CFR 1.78(a), specific reference to the prior-filed application must be included in the first sentence of the specification. See Official Action, point 3, page 3.

Applicants respectfully submit that a reference to the prior-filed application was submitted in a preliminary amendment filed with the present U.S. patent application September 25, 2003. See Preliminary Amendment, page 2. The prior-filed application, U.S. Patent Application Serial No. 09/326,342, subsequently issued as U.S. Patent No. 6,663,862 on December 16, 2003. The subject specification has been amended herein to reflect the issuance of U.S. Patent No. 6,663,862. Thus, applicants respectfully submit that the subject application is in compliance with 35 U.S.C. § 120 and 37 CFR 1.78(a).

IV. Response to the Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 32 and 35-41 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, the Patent Office alleges that claim 32 is a broad generic claim to a biomolecule described only by a functional characteristic, without any disclosed correlation between function and structure. Further, the Patent Office alleges that the specification lacks a sufficient variety of species to provide an adequate written description for the claimed genus. See Official Action, page 5.

After careful consideration of the rejections and the Patent Office's bases therefor, applicants respectfully traverse the rejections and submit the following remarks.

Initially, applicants note that there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. In re Wertheim, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976). Thus, a description as filed is presumed to be adequate, unless or until sufficient evidence or

reasoning to the contrary has been presented by the Patent Office to rebut the presumption. See Manual of Patent Examining Procedure (hereinafter "MPEP") § 2163.04 citing In re Marzocchi, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). Further, as a matter of Patent Office practice, the burden rests upon the Patent Office to establish a prima facie case of a failure to comply with 35 U.S.C. § 112, first paragraph, with respect to the invention described and claimed in applicants' patent application. See Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1, "Written Description" Requirement (hereinafter "The Guidelines"), 66 Fed. Reg. at 1105. This includes "the initial burden, after a thorough reading and evaluation of the content of the application, of presenting evidence or reasons why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims". Id. The Patent Office must establish "by a preponderance of the evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined in the claims". Id. at 1107, citing Wertheim, at page 263. The Patent Office, therefore, must have a reasonable basis to challenge the adequacy of the written description, and, in rejecting a claim, the Patent Office must set forth express findings of fact which support the lack of written description rejection.

Additionally, applicants note that there is "an inverse correlation between the level of skill and knowledge in the art and the specificity of disclosure necessary to satisfy the written description requirement". Id at 1105, citing Hybridtech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1379-80, 231 USPQ 81, 90 (Fed. Cir. 1986). With regard to the "representative number of species" necessary to describe an entire genus, applicants further note that what constitutes such a representative number is also an inverse function of the skill and knowledge in the art. Satisfactory disclosure is achieved if the skilled artisan recognizes from the disclosed species that the applicant was "in possession of the necessary common attributes or features of the elements possessed by the genus" Id. at 1106.

Applicants respectfully submit that claim 32 provides the skilled artisan with a structural, as well as functional, description of the subject nucleic acid molecule by

reciting that the subject nucleic acid molecule encodes a polypeptide of the B1 domain of protein G (GB1). The GB1 polypeptide is described in detail in the specification. See page 9, lines 19-23, page 10, lines 1-15, and Figure 1. From the teachings provided by the specification, the skilled artisan would be able to determine structural information, including sequences, of native GB1 domain polypeptides, as well as the sequences of nucleic acids encoding such polypeptides. See page 67, Table 3. Thus, the possible structural variations are not "limited to any class of polymer with any biomolecule" as alleged by the Patent Office. See Official Action, page 7.

Further, the specification teaches multiple representative embodiments of the subject GB1 domain polypeptide referred to by claim 32. For example, the specification teaches that "a substitution of the glutamate 27 residue with any of the other 19 amino acids" provides a polypeptide having the binding attributes recited in claim 32 (*i.e.*, wherein the Fc binding activity is abolished but the Fab binding activity is maintained). See page 18, lines 1-6. The specification further teaches that any substitution of lysine 28, lysine 31, asparagine 35, tryptophan 43, or of threonine 44 and tyrosine 45 also results in a polypeptide of the presently described subject matter. See page 18, lines 13-18 and 22-24; page 19, lines 1-3, 7-12, and 16-21; and page 20, lines 1-7. Applicants note that the specification at page 20, lines 1-7 has been amended herein to correct for typographical errors, including correcting the line to identify the threonine residue that can be mutated as threonine 44. Support for this amendment can be found in the specification as filed, in particular, by comparing SEQ ID NO: 2, the amino acid sequence of the native GB1 domain polypeptide with SEQ ID NO: 18, a specific example of a doubly mutated polypeptide described at page 20, lines 1-10.

Applicants respectfully submit that the skilled artisan would thus be able to determine multiple oligonucleotide sequences to encode the described polypeptides, and therefore, would be in possession of many representative species of the genus of nucleic acids described in claim 32. Further, this description of possible mutations clearly ties structural information to function.

Additionally, the specification teaches the ten specific polypeptides recited in claim 33 that are encoded by the disclosed nucleic acids, SEQ ID Nos 6, 8, 10, 12, 14, 16, 18, 20, 22 and 24. See page 28, lines 10-13, Table 4, and the Sequence Listing. The specification also teaches nine specific nucleic acid molecules for encoding GB1 polypeptides having Fab binding but not Fc binding as recited in claim 32, SEQ ID Nos 5, 7, 9, 11, 15, 17, 19, 21 and 23. See page 28, lines 15-18 and the Sequence Listing.

Accordingly, applicants respectfully submit that the specification as filed discloses a representative number of species of the genus encompassed by the subject matter recited by claim 32, and, thus, shows that applicants were in possession of the claimed subject matter. Therefore, applicants submit that claim 32 and its dependent claims 35-41 comply with the written description requirement of 35 U.S.C. § 112, first paragraph. Applicants respectfully request the withdrawal of the rejection of claims 32 and 35-41 under 35 U.S.C. § 112, first paragraph. Applicants also request allowance of claims 32 and 35-41 at this time.

V. Response to the Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 32-41 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. In particular, the Patent Office contends that the acronyms "GB1" and "IgG" in claim 32 must be spelled out when used for the first time in a chain of claims. Further, the Patent Office contends that claims 35-38 are unclear. The Patent Office alleges that it is unclear how being positioned under the control of a promoter, or in terms of a DNA segment or a recombinant vector further define the nucleic acid molecule of claims 35-38.

Initially, with regard to the acronyms in claim 32, applicants respectfully submit that claim 32 has been amended herein to include the terms to which the acronyms "GB1" and "IgG" apply. Support for the amendment to claim 32 can be found in the table of abbreviations in the subject application as filed. See the instant specification at page 1, line 17 and page 2, line 4.

With regard to clarity issues specifically related to claims 35-38, applicants respectfully traverse the rejection. However, in order to facilitate prosecution of the claims, applicants respectfully submit that claims 35-38 have been amended herein. Thus, claim 35 as amended herein recites the isolated nucleic acid molecule of claim 33, wherein the isolated nucleic acid molecule comprises a DNA segment. Support for the amendment can be found in the claim as filed and in the specification at page 28, lines 10-24.

Claim 36 as amended herein recites the isolated nucleic acid molecule of claim 34, wherein the isolated nucleic acid molecule is positioned under the control of a promoter. Support for the amendment can be found in the claim 36 as filed and in the specification at page 30 lines 1-16 and page 31, lines 19-21.

Claim 37 as amended herein recites the isolated nucleic acid molecule of claim 33, wherein the nucleic acid molecule is inserted in a recombinant vector. Support for the amendment can be found in claim 37 as filed and in the specification at page 32, lines 18-22. As claim 38 is dependent on claim 37, applicants believe that the amendment to claim 37 also clarifies the meaning of claim 38.

In light of the present amendments, applicants respectfully request that the rejections of claims 32-41 under 35 U.S.C. § 112, second paragraph, be withdrawn. Further, applicants request that claims 32-41 be allowed at this time.

VI. Response to the Rejection Under 35 U.S.C.§ 102(b)

Claims 32 and 35-41 have been rejected under 35 U.S.C. § 102(b) upon the contention that the claims are anticipated by U.S. Patent No. 4,977,247 to Fahnestock et al. (hereinafter "Fahenstock"). In particular, the Patent Office alleges that Fahnestock teaches an isolated nucleic acid molecule encoding a GB1 domain polypeptide which binds a Fab fragment of an IgG but does not bind a Fc fragment. See Official Action, page 10.

Applicants respectfully traverse the rejection and offer the following remarks.

Initially, applicants respectfully submit that Fahenstock, at column 18, lines 46-51, states that the immobilized Protein G varients described therein "bind to IgG and Fc fragments much better than to Fab and $F(ab')_2$ fragments." This observation is reiterated in the discussion of experimental results in Example XVI, which includes Tables 2 and 4 cited by the Patent Office at the bottom of page 9 of the Official Action. In this discussion, Fahenstock teaches that "in all cases, the immobilized variants exhibited much weaker binding to Fab and $F(ab')_2$ fragments in comparison to IgG and Fc fragments." See Fahenstock, column 54, lines 29-31.

Therefore, when viewed as a whole, Fahenstock does not teach isolated GB1 polypeptide fragments that maintain binding activity for Fab fragments of an IgG but do not bind to Fc fragments. Similarly, as the isolated nucleic acids described by Fahenstock encode the protein G variants described as having better binding activity to IgG and Fc fragments than for Fab and $F(ab')_2$ fragments, applicants respectfully submit that Fahenstock does not disclose isolated nucleic acids encoding polypeptides having the binding activities described in claim 32 of the subject application. Indeed, Fahenstock appears to teach away from isolated nucleic acids encoding GB1 domain polypeptides which bind a Fab fragment of a IgG but do not bind a Fc fragment of IgG.

In sharp contrast, the subject application describes and claims nucleic acids encoding polypeptides that bind to Fab fragments but not to Fc fragments. In particular, as described above, the subject application discloses specific mutations to a native GB1 polypeptide that result in the loss of binding to Fc fragments, but do not diminish the ability of the peptide to bind Fab fragments. See Specification, pages 18-20. Claim 32 recites an isolated nucleic acid encoding such a GB1 polypeptide, "which binds a Fab fragment of an immunoglobulin G (IgG) but does not bind a Fc fragment of an IgG".

Therefore, applicants respectfully submit that Fahenstock does not support a rejection of claim 32 under 35 U.S.C. § 102(b). Further, as claims 35-41 depend from claim 32, applicants respectfully submit that these claims also are believed to be distinguished over Fahenstock. Withdrawal of the rejection of claims 32 and 35-41

under 35 U.S.C. § 102(b) and allowance of claims 32 and 35-41 is respectfully requested.

VII. Response to the Rejection Under 35 U.S.C.§ 102(a)

Claims 32 and 35-40 have been rejected under U.S.C. § 102(a) as being anticipated by Sloan et al., (*Protein Engineering*, 11(9), 819-823 (1998); hereinafter "Sloan"). The Patent Office alleges that Sloan teaches an isolated nucleic acid molecule encoding a GB1 polypeptide that binds a Fab fragment of an IgG but does not bind a Fc fragment, and further teaches such a nucleic acid molecule comprised within a recombinant expression vector and a host cell.

Applicants respectfully traverse the rejection. In particular, applicants note that the authors of Sloan are David J. Sloan and Homme W. Hellinga, the co-inventors of the subject application. Thus, Sloan does not qualify as prior art under 35 U.S.C. § 102(a) because Sloan is not a publication by another.

Further Sloan was published in September 1998. As discussed hereinabove in Section II, the subject application claims priority to June 4, 1999. Thus, Sloan was published less than one year prior to the instant application. As such, applicants believe that the rejection of the claims under 35 U.S.C. § 102(a) is improper. See MPEP § 2132.0.

Accordingly, applicants request the withdrawal of the rejection of claims 32 and 35-40 under 35 U.S.C. § 102(a). Applicants also respectfully request that claims 32 and 35-40 be allowed at this time.

VIII. Response to the Obviousness-Type Double Patenting Rejection

The Patent Office has rejected claims 32-33 under the judicially created doctrine of obviousness-type double patenting upon the contention that the claims are unpatentable over claims 1-3 and 5-6 of U.S. Patent No. 6,663,862 (hereinafter "the '862 patent"). Specifically, the Patent Office alleges that while the conflicting claims are not identical, they are not patentably distinct from each other because the patent and the instant claims are drawn to a GB1 polypeptide, even though the

claims of the subject application are claims to the nucleic acid encoding such a polypeptide and do not claim the polypeptide itself, as do the claims of the '862 patent.

Applicants respectfully traverse the rejection. Initially, applicants respectfully submit that restriction requirements made in the case of the subject application and in the case of the parent application, which resulted in the issuance of the '862 patent, indicated that claims 32-33 of the subject application and claims 1-3 and 5-6 of the '862 patent are separate inventions. See the Office Communication in the parent U.S. patent application, mailed December 8, 1999, page 2; and the Office Communication in the present U.S. patent application, mailed January 24, 2005, page 2. Claims 32-33 of the present application are the same as claims 32-33 of the parent application and are part of Group II, directed to isolated nucleic acid molecules and recombinant host cells. Claims 1-3 and 5-6 of the '862 patent resulted from claims 1-4 and 6-7 of the parent application, part of Group I, drawn to an isolated GB1 polypeptide and a method of preparation thereof.

The third sentence of 35 U.S.C. § 121 states that a patent issuing on an application for which a requirement for restriction has been made cannot be used as a reference against a divisional application filed before the issuance of the parent application. As the instant application is a divisional application of the application that issued as the '862 patent and the claims being prosecuted correspond to claims that were restricted out of the parent, applicants respectfully submit that the instant double patenting rejection of claims 32-33 is believed to be contrary to 35 U.S.C. 121. See MPEP § 804.01.

Accordingly, applicants respectfully request the withdrawal of the rejection of claims 32 and 33 under the judicially created doctrine of obviousness-type double patenting. Further, applicants respectfully request that claims 32 and 33 be allowed at this time.

IX. New Claims

New claim 57 has been added. Claim 57 is directed to isolated nucleic acids of claim 32, wherein the nucleic acid encodes a polypeptide selected from among SEQ ID NO's 25, 26, 27, 28, 29 and 30. The specification has also been amended herein by adding SEQ ID NO's 25-30 to the Sequence Listing.

Support for claim 57 and the amendments to the Sequnce Listing can be found in the specification as filed. In particular, support related to SEQ ID NO: 25, a GB1 polypeptide wherein the glutamate at amino acid residue 27 has been replaced with any of the other 19 natural amino acids can be found at page 18, lines 1-6. Support related to SEQ ID NO: 26, the GB1 polypeptide wherein lysine 28 has been replaced with any of the other 19 amino acids, can be found at page 18, lines 13-18. Support related to SEQ ID NO: 27, the GB1 polypeptide wherein lysine 31 has been replaced with any of the other 19 amino acids, can be found at page 18, lines 22-24 and page 19, lines 1-3. Support related to SEQ ID NO: 28, the GB1 polypeptide wherein asparagine 35 has been replaced with any of the other 19 amino acids, can be found at page 19, lines 7-12. Support related to SEQ ID NO: 29, the GB1 polypeptide wherein tryptophan 43 has been replace with any of the other 19 amino acids, can be found at page 19, lines 16-21. Support related to SEQ ID NO:30, the GB1 polypeptide wherein threonine 44 and tyrosine 45 have each been replaced by any of the other 19 amino acids, can be found at page 20, lines 1-7. No new matter has been added. Applicants respectfully submit that new claim 57 is in condition for allowance and respectfully request the same.

CONCLUSIONS

In light of the above amendments and the remarks presented hereinabove, it is respectfully submitted that Claims 32-41 are in proper condition for allowance, and such action is earnestly solicited.

If any minor issues should remain outstanding after the Examiner has had an opportunity to study the Amendment and Remarks, it is respectfully requested that

the Examiner telephone the undersigned attorney so that all such matters may be resolved and the application placed in condition for allowance without the necessity for another Action and/or Amendment.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account Number **50-0426**.

Respectfully submitted,
JENKINS, WILSON, TAYLOR & HUNT, P.A.

Date: 03/20/2006 By: _____
Arles A. Taylor, Jr.
Registration No.39,395

AAT/CPP/ALO/acy

Customer No: 25297

IN THE SEQUENCE LISTING:

Please replace the Sequence Listing with Substitute Sequence Listing submitted herewith.